PB90-162603

Superfund Record of Decision (EPA Region 8): Monticello Vicinity Properties, San Juan County, UT. (First Remedial Action), September 1989

(U.S.) Environmental Protection Agency, Washington, DC

29 Sep 89

U.S. Department of Commerce
National Technical Information Service
NTIS

PB90-162603

United States
Environmental Protection
Agency

Office of
Emergency and
Remedial Response

EPA/ROD/R08-89/025
September 1989

EPA

Superfund Record of Decision:

Monticello Vicinity Properties, UT

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15. Supplementary Notes

16. Abstract (Limit: 200 words)

The Monticello Vicinity Properties site, also known as the Monticello Radiation Contaminated Properties, is a federally-owned abandoned vanadium and uranium mill area in the city of Monticello, San Juan County, Utah. Land use in the area is residential, however, there is limited commercial use as well. Milling of vanadium and uranium occurred from 1944 to 1960. Throughout the operating period, mill tailings were used in the city of Monticello for construction purposes including fill for open lands; backfill around water, sewer, and electrical lines; sub-base for driveways, sidewalks, and concrete slabs; backfill against basement foundations; and as sand mix in concrete, plaster, and mortar. Currently, the site consists of a dismantled vanadium and uranium mill, and stabilized mill tailings piles. The Monticello Radiation Contaminated Properties were accepted into the Department of Energy's Surplus Facilities Management Program in 1980 for remedial action. The Vicinity Properties were formally included on the NPL in 1986 and, therefore, must comply with requirements of CERCLA. In October 1989 the Millsite itself was also listed on the NPL. DOE established an official list of Vicinity Properties designated for remedial action based on radiological surveys conducted from 1971 to 1984. As of March 1989, 91 properties had been identified to be included in the Monticello Vicinity Properties. Of these 91 properties, 53 remedial actions have been completed and 12 additional properties (See Attached Sheet)

17. Document Analysis a. Descriptors

Record of Decision - Monticello Vicinity Properties, UT
First Remedial Action - Final
Contaminated Media: construction material and debris contaminated with uranium (mill tailings)
Key Contaminants: radium-226 and radon-226 in uranium mill tailings

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

18. Availability Statement	19. Security Class (This Report) None	21. No. of Pages 35
	20. Security Class (This Page) None	22. Price A03

(See ANSI-Z39.18) *See Instructions on Reverse*

OPTIONAL FORM 272 (4-77)
(Formerly NTIS-35)
Department of Commerce

EPA/ROD/RO8-89/025
Monticello Vicinity Properties, UT
First Remedial Action - Final

16. Abstract (continued)

are slated for remedial action in 1989. Approximately 100,000 cubic yards (135,000 tons) of contaminated construction debris and wind blown deposited contamination is estimated to be within the Vicinity Properties. The primary contaminants of concern in construction material and debris are thorium-230, radium-226, and radon-222 contained in the vanadium and uranium mill tailings.

The selected remedial action for this site includes excavation and removal of residual radioactive material from affected properties and restoration/reconstruction using clean materials, or modification of existing structures to isolate radiation sources from inhabitants; filling and regrading excavated areas; and disposal and temporary storage of all contaminated material at the Monticello Millsite. The millsite is addressed separately under a 1988 Federal Facilities Inter-agency Agreement. The estimated present worth cost of this remedial action is $65,000 per Vicinity Property for 91 "included' properties, or $5,915,000.

ATTENTION

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DECLARATION
FOR THE
RECORD OR DECISION

SITE NAME AND LOCATION

Monticello Vicinity Properties Project
Department of Energy Facility - Surplus Facilities Management Program
Monticello, San Juan County, Utah

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial action for the Monticello Vicinity Properties NPL site.

The Environmental Protection Agency (EPA), the State of Utah (the State) and the U.S. Department of Energy (DOE) have agreed to conduct the remedial action(s) at the site pursuant to the Federal Facilities Agreement of December 1988 under Section 120 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986 (CERCLA), and the National Contingency Plan. As part of this Agreement, EPA the State have reviewed DOE's project documentation. On May 24, 1989, the State and EPA concluded that DOE had complied with the CERCLA requirements by performing the functional equivalent of a Remedial Investigation/Feasibility Study at the Monticello Vicinity Properties.

This decision document is based upon the administrative record for the Monticello Vicinity Properties. The attached Record of Decision Summary identifies the items comprising the administrative record upon which the selection of the remedial action was based. The State concurs on the selected remedy.

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this Record of Decision, may present an imminent and substantial endangerment to public health, welfare, or the environment.

DESCRIPTION OF THE SELECTED REMEDY

In consultation with EPA and the State, DOE developed a remedial action plan to stabilize and control uranium mill tailings and related contaminated material at the Monticello Vicinity

Properties in a long-term manner that complies with EPA's Standards for Remedial Action at Inactive Uranium Processing Sites (40 CFR Part 192).

Concern regarding the potential health hazards that result from exposure to radiation emanating from uranium mill tailings and from contaminated structures in the vicinity of such sites ("vicinity properties" or "off-site properties") prompted the U.S. Congress to enact legislation that authorized DOE to undertake remedial action to prevent or minimize this type of environmental hazard. The Uranium Mill Tailings Radiation Control Act of 1978 authorized remedial action at certain inactive uranium milling sites that were not owned by the Federal government. Since the Monticello mill site is owned by the Federal government, it was included instead in the Department of Energy's Surplus Facilities Management Program in 1980 for remedial action. Subsequently, the Monticello Vicinity Properties Project was initiated.

The purpose of the Monticello Vicinity Properties Project is to reduce the public's exposure to radiation either by removing contaminated material from properties or by modifying existing structures to isolate radiation sources. The "Standards for Remedial Action at Inactive Uranium Processing Sites" identified in 40 CFR 192 and the Hot Spot Criteria established by radiological protection guidelines in the U.S. Department of Energy Guidelines for Residual Radioactive Material at Formerly Utilized Sites Remedial Action Program and Remote Surplus Facilities Management Program Sites (Revision 2, March 1987), will be the basis for remedial action under the proposed plan.

Because mill tailings from the Monticello millsite were used in the city of Monticello for construction of residential buildings, the cleanup activities for the Monticello Vicinity Properties will require excavation of contaminated materials and, in some cases, demolition of sidewalks, patios, sheds, and other improvements. All excavations will be refilled with clean fill and regraded; all affected structures and other improvements will be reconstructed. All contaminated material will be removed to the Monticello millsite and temporarily stored on the East Tailings Pile. The millsite is addressed separately under the 1988 Federal Facilities Agreement. If Resource Conservation and Recovery Act (RCRA) hazardous wastes are found, disposal plans will be prepared for that specific hazardous waste and approved by EPA in consultation with the State. All remedial actions shall meet applicable or relevant and appropriate requirements of Federal law and those State laws more stringent than Federal laws in accordance with Section 121 of CERCLA.

After remediation is completed, DOE will prepare a completion report for each property certifying that the property has been cleaned up in compliance with the standards discussed above.

Verification of the site remediation will be performed by an independent contractor as an additional assurance that standards have been met.

The proposed cleanup activities must be accomplished before remedial action at the Monticello millsite is complete, since the contaminated material from the vicinity properties will be addressed along with the tailings and other contaminated material remaining at the millsite. This Record of Decision covers all properties that were contaminated, including those that have been remediated, those that are currently included but have not been remediated, and all future properties that might be included for remediation.

The purpose of the Monticello Vicinity Properties Record of Decision document is to show that selection of the preferred alternative, which is currently being used to complete remedial actions in Monticello, was an appropriate selection and to satisfy the requirements of the Federal Facilities Agreement and the Comprehensive Environmental Response, Compensation, and Liability Act as amended.

STATUTORY DETERMINATIONS

Based on the standards established pursuant to CERCLA; the National Contingency Plan; and the Standards for Remedial Action at Inactive Uranium Processing Sites, we have determined that the selected remedy for the Monticello Vicinity Properties Project is protective of human health and the environment, attains applicable or relevant and appropriate requirements to this remedial action, and is cost-effective considering current technology.

This remedy utilizes permanent solutions (removal of all radioactive tailings and other contaminated material) to the maximum extent practicable for this site. This remedy does not satisfy the statutory preference for treatment as a principal element of the remedy, because treatment of the principal potential risks from the site was not found to be practicable.

Pursuant to CERCLA, EPA will review the response action no less often than each five (5) years for portions of the remedial action involving waste being left on-site, as required by the Federal Facilities Agreement, after the initiation of the final response to assure that human health and the environment are being protected by the remedial action being implemented.

9-29-89
Date

Regional Administrator (Region VIII)
U.S. Environmental Protection Agency

Date

U.S. Department of Energy

Concurring in this determination:

27 Sept 1989
Date

State of Utah
Department of Health

MONTICELLO VICINITY PROPERTIES

RECORD OF DECISION SUMMARY

1.0 SITE NAME, LOCATION, AND DESCRIPTION

The city of Monticello is located in San Juan County, which occupies the southeastern corner of Utah (Figure 1). The city lies in the Paradox Basin just east of the Abajo Mountains and north of Montezuma Creek. The major highway in the Monticello area is U.S. Highway 191, which runs generally in a north-south direction, connecting Monticello with Moab 56 miles to the north and with Blanding 22 miles to the south.

The town of Monticello is located at an average elevation of 7,000 ft. above sea level. Land use within the majority of Monticello Vicinity Properties is for residential housing. Adjacent land usage includes heavy and light commercial use and a "controlled" zoning district allowing a mix of agricultural, residential, industrial, and commercial use. Natural resource use in the immediate area includes domestic water supply systems, with the city being supplied by springs near the Abajo Mountains. Local groundwater usage includes rural drinking water and farmland irrigation. Surface water usage is primarily for irrigation. No mineral exploration exists within the immediate vicinity of the properties.

2.0 SITE HISTORY AND ENFORCEMENT ACTIVITIES

The original Monticello mill was financed by the United States Government through its agent, the Defense Plant Corporation, to provide an additional source of vanadium needed during World War II. The Vanadium Corporation of America operated the mill for the Government until 1944, and privately under a lease from the Government from 1944 to 1946. The U.S. Atomic Energy Commission reactivated the mill in 1948 and engaged the Galigher Company to rebuild it. The mill was operated for the U.S. Atomic Energy Commission from 1949 to 1956 by The Galigher Company, and from 1956 through 1959 by the National Lead Company, under cost-type contracts to produce both uranium and vanadium. During the years following U.S. Atomic Energy Commission takeover of the mill, uranium was the primary product.

Mill operations were terminated on January 1, 1960, and the plant was dismantled by the end of 1964. The mill tailings piles were stabilized over the period 1961 to 1962. Removal of contaminated soils from associated ore-buying stations was undertaken between May 1974 and August 1975. The mill foundations were also demolished and bulldozed into adjacent pits during this same period of time. It is estimated that during its years of operation, the mill processed approximately 900,000 tons of ore.

Throughout the operating period, mill tailings from the Monticello millsite were used in the city of Monticello for construction. These tailings were used as fill for open lands;

backfill around water, sewer, and electrical lines; sub-base for driveways, sidewalks, and concrete slabs; backfill against basement foundations; and as sand mix in concrete, plaster, and mortar. The total tonnage of uranium mill tailings removed from the millsite for construction purposes, although never documented, is believed to be approximately 135,000 tons. This retrieval of contaminated tailings from the Monticello millsite was controlled by August 1975 as a fence was erected around the site to prevent unauthorized access and the ore-buying stations were cleaned up. Figure 2 outlines the Monticello Vicinity Properties project area and shows the adjacent millsite location.

Concern regarding the potential health hazards that result from exposure to wind and water borne contamination and radiation emanating from uranium mill tailings and from contaminated structures in the vicinity of such sites ("vicinity properties" or "off-site properties") prompted the U.S. Congress to enact legislation, which authorized the Department of Energy to undertake remedial action to prevent or minimize this type of environmental hazard. The Uranium Mill Tailings Radiation Control Act of 1978 authorized DOE to undertake remedial action at certain inactive uranium milling sites never owned by the Federal government. Since the Monticello millsite is a Federally owned facility, it was not elegible for remediation under the Uranium Mill Tailings Radiation Control Act and was instead accepted into the Department's Surplus Facilities Management Program in 1980 for remedial action. Subsequently, the Monticello Vicinity Properties Project was initiated.

DOE established an official list of Vicinity Properties designated for remedial action under its Surplus Facilities Management Program on the basis of radiologic surveys. Radiologic surveys conducted throughout the city of Monticello to identify the existence, nature, and magnitude of radiation exposure from mill tailings originating from the Monticello millsite included:

1. In 1971 and 1980, EPA-subsidized mobile scanning surveys (U.S. Environmental Protection Agency, 1972; Bendix Field Engineering Corp., 1982) were performed by DOE contractors. These surveys identified 98 anomalous properties.

2. In 1982, Bendix Field Engineering Corporation, under contract to DOE, investigated a total of 114 properties, including the 98 properties identified above plus an additional 16 properties, which were surveyed at the request of landowners.

3. Oak Ridge National Laboratory performed a survey in 1983, which added 36 more properties to the investigation.

4. In June 1984, a radiation survey of buildings in Monticello was conducted by EPA Region VIII personnel together with personnel from the State of Utah and DOE. As a result of the

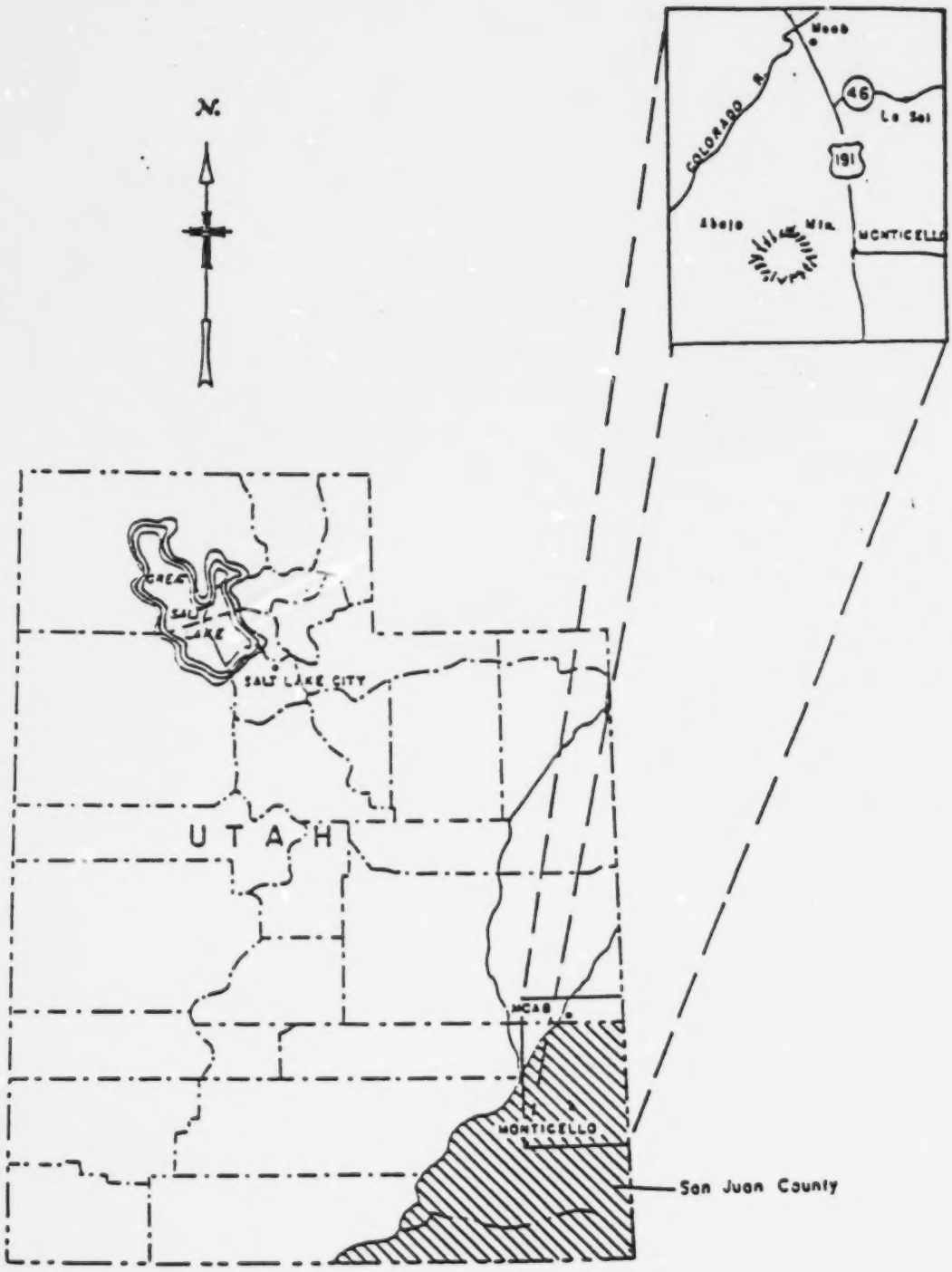

Figure 1. Monticello, Utah, Regional Location Map

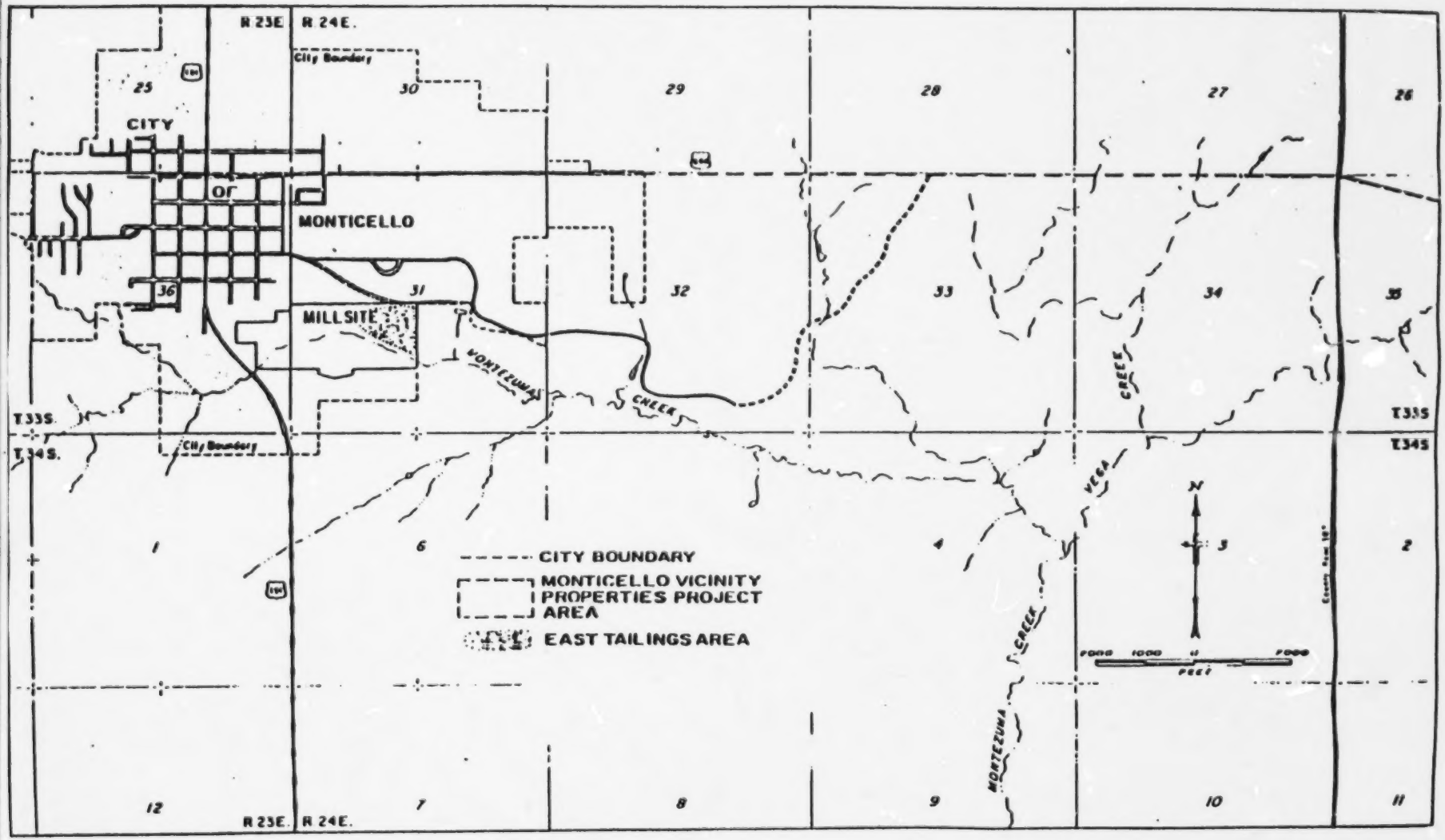

Figure 2. Monticello Vicinity Properties Project Area

surveys, 10 additional buildings were identified for further investigations.

In October 1984, the Monticello Vicinity Properties were proposed for inclusion (as "Monticello Radioactively Contaminated Properties") on the National Priorities List pursuant to CERCLA and were formally included on the National Priorities List on June 10, 1986. As a result, cleanup activities at the Vicinity Properties must satisfy requirements of CERCLA.

Through its Grand Junction Projects Office, the Department of Energy began cleanup of properties that exceeded levels for inclusion in the program in the summer of 1984 in accordance with EPA's Standards for Remedial Action at Inactive Uranium Processing Sites. DOE has accepted responsibility for properties contaminated with tailings from the Monticello millsite. DOE has also conducted cleanup action, which was funded by EPA in 1984 at two properties not included in DOE's Surplus Facilities Management Program, under an interagency agreement.

As of March 1989, 204 properties have been identified as anomalous properties with 91 identified by DOE to be included in the Monticello Vicinity Properties Project. Of these 91 "included" properties, the Department of Energy has completed 53 remedial actions and has scheduled 12 additional properties for remedial action in 1989. There are probably other contaminated properties in addition to the 204 screened properties mentioned above. As other contaminated properties are identified, they will be considered for addition to the Monticello Vicinity Properties Project according to the process set forth in Section XIII of the Federal Facilities Agreement. The 204 screened properties include some where owners have refused surveys and/or remedial action and some where the cleanup responsibility is still being disputed. EPA and the State of Utah will develop a plan for resolving owner refusals on specific properties. If DOE disputes responsibility for response activities at any given property, the procedure found in Part XIII of the Federal Facility Agreement will be used to determine who shall be responsible for cleanup.

EPA, the State, and DOE have agreed to conduct the response action(s) at the site pursuant to the Federal Facilities Agreement of December 1988 under Section 120 of the CERCLA, as amended. As part of this Agreement, EPA and the State have reviewed the DOE documentation and have agreed that DOE has complied with CERCLA requirements by performing the functional equivalent of a Remedial Investigation/Feasibility Study for Monticello Vicinity Properties currently addressed by DOE. Property investigations had begun and some remediations had concluded before the site was listed on the National Priorities List and prior to the passage of the Superfund Amendments and Reauthorization Act of 1986. Therefore, EPA and the State agreed

to evaluate all completed, ongoing, and future work for equivalency to CERCLA. The Record of Decision is a primary document, which is specifically referred to in the Federal Facilities Agreement at Section XII.C.1.i.

DOE submitted to EPA a document titled Monticello Vicinity Properties Equivalency of Documentation, dated April 1989, which EPA subsequently approved on May 24, 1989, concluding that the documentation was functionally equivalent to the Remedial Investigation/Feasibility Study for the Monticello Vicinity Properties.

3.0 COMMUNITY RELATIONS HISTORY

A proposed plan was developed for the Monticello Vicinity Properties Project in June 1989. The Proposed Plan is a public participation decision document and, as such, there was opportunity for the public to comment to DOE, EPA, and the State. Public comment on the Proposed Plan (for 30 days) began June 30, 1989 and extended through July 30, 1989. A summary of responses to the questions raised during the public comment period is attached as Appendix A. All written comments were sent to:

Mr. Pete Mygatt, Public Affairs Specialist
U.S. Department of Energy
P.O. Box 2567
Grand Junction, Colorado 81502
(303) 248-6015 (collect calls were accepted)

An index to the Administrative Record is attached as Appendix B.

Verbal comments were made at a public hearing between 7 p.m. and 10 p.m. on July 6, 1989, at the San Juan County Courthouse in Monticello, Utah. Documentation developed by DOE for the Monticello Vicinity Properties can be reviewed at the Administrative Record Repository:

San Juan Public Library
80 North Main Street
Monticello, Utah 84535
(801) 587-2281

Overall public acceptance of the work plan for the remedial action of the Monticello Vicinity Properties has been very good. Questions and comments received from the audience during the public meeting held on July 6, 1989, related primarily to the steps of the remedial action process for individual properties, overall costs of the program, and warranty questions for properties that had already been remediated.

The only new area of concern voiced by the public related to enforcement of cleanup under the program. EPA responded to the

concern by indicating that the program was not one of voluntary participation and that, by law, EPA was required to ensure the properties identified on the National Priorities List were cleaned up. The exact methods of enforcement, in cases where owners refuse to allow access to the property or to participate in the cleanup, remain to be determined.

4.0 SUMMARY OF SITE CHARACTERISTICS AND SITE RISKS

Mill operations were terminated on January 1, 1960, at the Monticello millsite, and the plant was dismantled by the end of 1964. The mill tailings piles were initially stabilized with 6 to 18 inches of cover and revegetated during the period of 1961 to 1962.

Throughout the operating period, tailings from the Monticello millsite were wind-blown into the city of Monticello or used in the city of Monticello for construction. These tailings were used as fill for open lands; as backfill around water, sewer, and electrical lines; as sub-base for driveways, sidewalks, and concrete slabs; as backfill against basement foundations; and as sand mix in concrete, plaster and mortar. The total tonnage of uranium mill tailings removed from the millsite for construction was not documented. However, contaminated material from vicinity properties (in the Monticello area currently being remediated) is estimated at 100,000 cubic yards (135,000 tons). This includes wind blown deposited contamination.

Specific properties were investigated and an environmental evaluation completed by 1985 (before passage of the Superfund Amendments and Reauthorization Act). These investigations and environmental evaluations are found in two documents, Results of the Survey Activities and Mobile Gamma Scanning in Monticello, Utah, July 1984, Oak Ridge National Laboratory (ORNL/TM 9738) and Environmental Evaluation on Proposed Cleanup Activities at Vicinity Properties near the Inactive Uranium Millsite, Monticello, Utah, August 1985, Bendix Field Engineering Corporation. These documents are contained in the Monticello Vicinity Properties Equivalency of Documentation, April 1989, U.S. Department of Energy.

Summary of Site Risks

The following summarizes the predicted health effects that may occur to the general public due to contaminated material existing at vicinity properties. Calculations are based on exposure rates affecting persons at the fifteen properties initially authorized for cleanup. Details of the health risks are found in the Monticello Vicinity Properties Equivalency of Documentation (compiled April 1989, for the Monticello Remedial Action Project Administrative Record), specifically within the Enviromental Evaluation on Proposed Cleanup Activities at Vicinity Properties

Near the Inactive Uranium Millsite, Monticello, Utah, Appendix B, DOE-GJ-35, Bendix Field Engineering Corporation, August 1985.

The principal environmental radiological impacts and associated effects on human health are attributed to thorium-230, radium-226, radon-222, and daughters of radon-222 contained in the uranium-mill tailings. Although these radionuclides occur in nature, their concentrations in tailings material are several orders of magnitude greater than their average concentrations in the earth's crust.

The major potential environmental routes of exposure to man are listed below:

o Inhalation of radon-222 and daughter products that result from the continuous radioactive decay of radium-226. The greatest hazard to human health results from the inhalation of radon-222 daughters, which emit alpha radiation that affects the lungs.

o External whole-body gamma exposure directly from radionuclides in the tailings.

o Inhalation and ingestion of windblown tailings dust. The primary health hazard results from the alpha emitters thorium-230 and radium-225, both of which affect the bones and lungs.

o Ingestion of groundwater and surface water contaminated with radioactive elements, primarily radium-226.

o Ingestion of food potentially contaminated through uptake and concentration of radioactive elements by plants and animals.

A summary of radiation doses from all potential exposure pathways is presented in Table 1. The potential ingestion pathways of food, groundwater, and surface water were determined to be insignificant exposure routes. The number of potential health effects (defined as radiation-induced cancer deaths) expected from the whole-body radiation dose listed in Table 1 is approximately 0.02. The number of potential health effects expected from the lung-radiation dose is approximately 0.06.

(Table 1 is presented on the next page)

Table 1. Predictions of Radiation Doses from Exposure Pathways

Pathway	Dose (mrem) Whole Body	Lung
Exposure to Radon and Radon Daughters	--	400
Exposure to External Gamma Radiation	438	--
Inhalation of Airborne Radioparticulates	0.033	2.5
Ingestion of Water	0	0
Ingestion of Food	0	0
Totals (rounded)	438	403

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this Record of Decision, may present an imminent and substantial endangerment to public health, welfare, or the environment.

5.0 DOCUMENTATION OF SIGNIFICANT CHANGES

Section 117(b) of CERCLA requires documentation of any significant changes from the preferred alternative as originally presented in the Proposed Plan. Since the preferred alternative has not changed for this Record of Decision, no further documentation is required. For comparison of the preferred alternative in the Plan for the cleanup activities at vicinity properties, Monticello, Utah, with the selected remedy, see Section 7.0.

6.0 DESCRIPTION OF ALTERNATIVES

Two basic alternatives for remedial action for Vicinity Properties exist.

o Removal of identified residual radioactive material and restoration with clean materials, or modification of existing structures to isolate radiation sources from inhabitants, is the preferred alternative. Cleanup activities will require excavation of contaminated materials, and in some cases, demolition of sidewalks, sheds, patios, and other improvements. All excavations will be refilled with clean fill and regraded; all affected structures and other improvements will be

reconstructed. The contaminated materials relocated temporarily to the East Tailings Pile at the millsite would be disposed of with millsite tailings in a permanent repository, covered by a separate action under CERCLA.

- No Action.

No other alternatives, such as stabilization in-place or treatment are considered practical or effective at reducing the risk to human health.

Applicable or Relevant and Appropriate Requirements (ARARs): The ARARs for the Monticello Vicinity Properties are the standards on which cleanup activities are based. In March 1983, EPA published its Standards for Remedial Action at Inactive Uranium Processing Sites (40 CFR 192). These Environmental Protection Agency standards established requirements for the control of tailings piles, cleanup of buildings, cleanup of open lands, and supplemental standards. DOE has adopted the concentration limits and associated requirements of these EPA standards into the DOE guidelines for residual radioactive material. As a result, the Standards for Remedial Action at Inactive Uranium Processing Sites, while not applicable, have been found to be relevant and appropriate to the Monticello Vicinity Properties remedial actions. DOE has also adopted the "hot-spot" criteria established in its own guidelines, U.S. Department of Energy Guidelines for Residual Radioactive Material at Formerly Utilized Sites Remedial Action Program and Remote Surplus Facilities Management Program Sites (Revision 2, March 1987). The EPA standards at 40 CFR 192 and the Department of Energy "Hot Spot" criteria are attached as Appendix C.

Other Applicable or Relevant and Appropriate Requirements that also apply are presented in DOE letter dated May 31, 1989, Transmittal of Detailed Analysis of Federal and State Potentially Applicable or Relevant and Appropriate Requirements for the Monticello Vicinity Properties, (MVP), and the State of Utah letter to EPA dated June 21, 1989 (BSHW-5705-1) include:

- U.S. Occupational Safety and Health Act of 1976, as amended
- Utah Occupational Safety and Health Standards
- Utah Bureau of Water Pollution Control Standards
- Utah Air Conservation Rules
- Utah Bureau of Radiation Control Standards
- Utah Bureau of Hazardous Waste Standards (except State RCRA criteria)

7.0 SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

Nine evaluation criteria have been developed by EPA to address CERCLA requirements and considerations, and to address the additional technical and policy considerations that have proven

to be important for remedial alternative selection. A summary of the preferred alternative performance against these nine criteria and how it compares to the no-action alternative is presented below.

Criterion No. 1 - Overall Protection of Human Health and the Environment

Approximately 85 percent of the radioactivity originally contained in uranium ore remains in the tailings after removal of the uranium, because radium and thorium, principal contributors to radioactive emissions, are not normally removed from uranium ores during milling. The principal environmental radiologic impact and associated effects on human health are attributed to the thorium-230, radium-226, radon-228, and daughters of radon-222 contained in the uranium mill tailings. Although these radionuclides occur in nature, their concentrations in tailings material are several orders of magnitude greater than their average concentrations in the earth's crust.

The major potential environmental routes of exposure to humans are listed below:

o Inhalation of radon-222 and daughter products that result from the continuous radioactive decay of radium-226. Radon is a gas that diffuses from the tailings. The greatest hazard to human health results from the inhalation of radon-222 daughters that emit alpha radiation affecting the lungs.

o External whole-body gamma exposure directly from radionuclides in the tailings.

o Inhalation and ingestion of wind-blown tailings dust. The primary health hazard results from the alpha emitters uranium-238, thorium-230 and radium-226, which affect the bones and lungs.

o Ingestion of groundwater and surface water contaminated with radioactive elements, primarily radium-226.

o Ingestion of food potentially contaminated through uptake and concentration of radioactive elements by plants and animals.

The removal of contaminated soils and materials from the Vicinity Properties will eliminate these health risks. The no-action alternative would continue to expose the Monticello community to these health risks.

Criterion No. 2 - Compliance with Applicable or Relevant and Appropriate Requirements

The preferred alternative will comply with Federal and State

standards and regulations that are applicable or relevant and appropriate for the Monticello Vicinity Properties. The no-action alternative, however, will not comply with the EPA Standards for Remedial Action at Inactive Uranium Processing Sites.

Criterion No. 3 - Long-term Effectiveness and Permanence

Removal of contamination offers long-term protection of public health from the radioactive tailings. Since the final disposal of the contaminated materials will be with the millsite tailings, the preferred alternative is also a permanent solution. The no-action alternative obviously provides neither long-term effectiveness nor permanence.

Criterion No. 4 - Reduction of Toxicity, Mobility, or Volume

Since no treatment technology is used in the removal of contaminated materials, there is no reduction in toxicity, mobility, or volume of radioactive materials. However, the placement of these materials and the millsite tailings in a final repository will reduce radioactive exposure and restrict mobility of contaminants which will prevent future environmental exposures. The no-action alternative would cause no reduction of toxicity, mobility, or volume.

Criterion No. 5 - Short-term Effectiveness

This criterion addresses the period of time needed to achieve protection, and any adverse impacts on human health and the environment that may be posed during the construction and implementation period until cleanup goals are achieved. Based on risk analysis, the expected exposure of an individual working on Vicinity Properties over the next 3 years is insignificant when compared to the radiation dose the individual receives from natural background radiation. The no action alternative would not increase exposure over background levels.

Criterion No. 6 - Implementability

The preferred alternative of removing the contaminated materials from Vicinity Properties is both administratively and technically feasible. Considering that 53 properties have already been remediated, it is, therefore, recognized that the preferred alternative is implementable. The no-action alternative could also be implemented.

Criterion No. 7 - Costs

To date, the average cost of remedial action has been approximately $65,000 per Vicinity Property. It can be assumed that the remaining properties still requiring remediation will

have similar average costs. The no-action alternative would obviously not incur these costs.

Criterion No' 8 - State Acceptance

The State of Utah is currently an active Participant in the Monticello Vicinity Properties Project and supports the preferred alternative. Likewise, The State opposes the no-action alternative.

Criterion No. 9 - Community Acceptance

Community acceptance of the preferred alternative is assessed in the Record of Decision Responsiveness Summary following a review of the public comments received on the Proposed Plan. The Responsiveness Summary, which includes community relations activities, is attached as Appendix A.

Based on past community relations and the fact that 53 properties have already been remediatad, it can be assumed that there is basic general support for the preferred plan. The no-action alternative may be expected to have little support in the community because potential health risks would not be eliminated. However, it is recognized that some local residents do not believe remedial action is necessary.

8.0 SELECTED REMEDY AND STATUTORY DETERMINATIONS

At this time, the preferred alternative, removal and relocation of uranium mill tailings, provides the best balance of trade-offs, with respect to the EPA standards at 40 CFR 192 and "Hot Spot" criteria used to evaluate remedies. The preferred action consists of removal of identified residual radioactive material and restoration with clean materials, or modification of existing structures to isolate radiation sources from inhabitants. Cleanup activities will require excavation of contaminated materials, and in some cases, demolition of sidewalks, sheds, patios, and other improvements. All excavations will be refilled with clean fill and regraded; all affected structures and other improvements will be reconstructed. The contaminated materials relocated temporarily to the East Tailings Pile at the millsite would be disposed of with millsite tailings in a permanent repository, covered by a separate action under CERCLA and the 1988 Federal Facilities Agreement.

Therefore, based on the information available at this time, the Department of Energy, the Environmental Protection Agency, and the State of Utah believe the preferred alternative would be

protective of human health and the environment, would meet Federal and State standards, would be cost effective, and would provide a permanent solution for the Monticello Vicinity Properties.

APPENDIX A

RESPONSIVENESS SUMMARY

Appendix A
RESPONSIVENESS SUMMARY
MONTICELLO VICINITY PROPERTIES (MVP) SUPERFUND SITE

1.0 OVERVIEW

This Responsiveness Summary responds to questions raised during the public comment period for the U.S. Department of Energy's Monticello Vicinity Properties Superfund Site remedial action project. The Monticello Vicinity Properties draft final proposed plan was available for public review from June 30, 1989 through July 30, 1989.

No written comments pertaining to the proposed plan for remedial action were received during the public comment period. During the public meeting held in Monticello, Utah, on July 6, 1989, questions and comments concentrated on the steps of the remedial action process for individual properties, overall costs of the program, and warranty questions for properties already remediated.

General public concerns related primarily to the issues of dust and noise suppression during remediation, truck traffic to and from the temporary repository (Monticello Mill site) for excavated material, and road wear caused by the remediation trucks. These general public concerns were previously and fully addressed in the proposed work plan.

The only new area of public concern related to enforcement of cleanup under the project. The Environmental Protection Agency has indicated that the program is not one of voluntary participation and that, by law, the Environmental Protection Agency is required to ensure the properties identified on the National Priority List are cleaned up.

2.0 BACKGROUND ON COMMUNITY INVOLVEMENT

Community relations activities by the U.S. Department of Energy's Grand Junction Projects Office have been ongoing since 1980. A comprehensive list of community relations activities is included as an attachment to this Responsiveness Summary. Contact has been predominantly through periodic briefings of city and county officials, State of Utah representatives and individual property owners. Periodic press releases and fact sheets have been issued and several public meetings have been conducted. As a result of this ongoing communication, community interest in the cleanup of the Monticello Vicinity Properties has been very low.

The low public concern can be accounted for by several factors:

- Local citizens have lived and worked with the uranium mining and milling industry since the early 1940's. Many made their livelihood from those industries.
- Most citizens do not view the mill tailings as a serious health hazard.
- The majority of the community is unconcerned about the presence of contamination on the vicinity properties. In some instances, owners have to be convinced that access to perform remedial action will benefit them in the long run.

- Remedial action at the vicinity properties has been in progress since 1984 with 53 out of the currently identified 91 properties having already been completed as of March 1989. Monticello residents are accustomed to seeing the work in progress and are familiar with the process that is being used.

3.0 SUMMARY OF COMMENTS RECEIVED AND AGENCY RESPONSES

Work Warranties

Comments raised during the public comment period on the proposed work plan for the Monticello Vicinity Properties were predominantly questions regarding warranty of work previously completed. These questions were not related to the work plan itself and were dealt with on an individual basis with the property owners.

Road Maintenance

A representative of the Monticello city council inquired about possible assistance from the Department of Energy in upgrading a road leading to the temporary repository. The inquiry did not relate directly to the vicinity properties work plan and will be pursued as a separate matter.

Dust Control

A citizen expressed concern about dust from work in progress at neighboring properties during this construction year as Monticello is experiencing drought conditions. The Department of Energy responded that dust control both at the individual property work site and at the temporary repository would be carefully maintained as standard operating procedure and that, if citizens had any problems, they should call either the project office in Monticello or the Department of Energy Grand Junction Projects Office in Grand Junction, Colorado.

Truck Tarping

A citizen expressed concern that occasionally trucks traveling to the temporary repository were not tarped. The Department of Energy responded that proper diapering and tarping is required of the construction subcontractors and any observed cases of non-tarping were to be reported to the Monticello construction office or to the Department of Energy Grand Junction Projects Office in Grand Junction, Colorado.

Cleanup Enforcement

Several citizens inquired as to what the procedure would be in the case of a property owner not allowing access for survey or not wanting the remediation done. The Environmental Protection Agency responded that since this is a National Priority List site, the Environmental Protection Agency has the ultimate authority to enforce access for assessment and/or remediation activities. Specific enforcement methods have yet to be determined.

Prior to the Environmental Protection Agency exercising its enforcement authority for property assessment or remediation, the Department of Energy shall use the maximum extent of its authority, exclusive of CERCLA section 104 authorities, to obtain agreement from the landowner allowing for access. In the event the landowner refuses, then DOE shall request EPA following consultation with the State of Utah to exercise its authority or initiate its own contact with the landowner for purposes of gaining access to said property.

4.0 REMAINING CONCERNS

All written and oral public concerns were addressed by either the work plan or at the public meetings. There are no remaining concerns left unaddressed.

ATTACHMENT TO APPENDIX A

COMMUNITY RELATIONS ACTIVITIES FOR THE MONTICELLO VICINITY PROPERTIES (MVP) SUPERFUND SITE

Community relations activities conducted on behalf of the Monticello Vicinity Properties (MVP) Superfund Site to date have included:

- Conducted Site visits and meetings between the DOE and the Remedial Action Contractor (RAC) and the Monticello City Manager, San Juan County Commissioners, State of Utah representatives and individual property owners. (1980)

- Issued news releases on the beginning of the vicinity property cleanup program and the results of generalized radiologic assessments and survey activities. (1980)

- DOE provided general information briefings to the local news media, Utah State Bureau of Radiation and Occupational Health and the S.E. Utah District Health Department.

- Issued a fact sheet on the Monticello Uranium Mill tailings. (1982)

- Maintained close contact with Governor, State Division of Environmental Health, and State Department of Natural Resources and Energy. (1982)

- Participated in San Juan County Board of Commissioners meeting to provide an update on the DOE's Surplus Facilities Management Program (SFMP) plan for Monticello cleanup. (1982)

- Maintained ongoing communications with city and county officials. (1983)

- Met with State officials and the San Juan County Board of Commissioners to discuss continuation of the Monticello Mill site (MRAP) and Vicinity Properties (MVP) programs and to outline program milestones. (1984)

- Issued a press release on planned decontamination activities for 45 properties. (1984)

- Achieved major news coverage of the Vicinity Properties program through an extensive newspaper feature on the cleanup of the Randall property. (1985)

- Sent a list of the 48 Vicinity Properties authorized for cleanup by the DOE's Formerly Utilized Sites Remedial Action Program (FUSRAP) to the Utah State Hazardous Waste Coordinator. (1985)

- Worked with the *San Juan Record* on a major article summarizing cleanup activities during 1985, including the Superfund cleanup program. (1986)

- Conducted community interviews with local officials and affected residents. (1986)

- Prepared a draft community relations plan. (May 1987)

- Maintained ongoing discussions between the Environmental Protection Agency (EPA), the Department of Energy (DOE), the State of Utah, San Juan County and the City of Monticello during the negotiation of the Federal Facilities Agreement. (1988)

- Issued a press release announcing a public meeting to discuss the Federal Facilities Agreement (FFA). A public comment period from February 9 through February 20, 1989 was provided. (January 27, 1989)

- Conducted a Health and Safety training workshop for those involved in the Monticello vicinity properties cleanup. Included in the training were representatives from the State of Utah and the City of Monticello. (March 1989)

- Established an information repository and the Administrative Record at the San Juan County Library. (June 28, 1989)

- Issued a press release on the public meeting on the Proposed Work Plan for the Monticello Vicinity Properties. (June 28, 1989)

- Published two Notices of Opportunity to Comment in the local newspaper. A public comment period from June 30, 1989 through July 30, 1989 was provided. (June 28 and July 5, 1989)

- Conducted a public meeting in Monticello on July 6, 1989 to describe the work plan contents and to respond to questions. Eight people attended including a representative from the City Council and a representative from the San Juan County Sanitation District. A compilation of the questions and answers is available as part of the Administrative Record at the San Juan County Library. (July 6, 1989)

APPENDIX B

ADMINISTRATIVE RECORD INDEX

JUNE 1989

Not included.

APPENDIX C

ENVIRONMENTAL PROTECTION AGENCY STANDARDS

APPENDIX C

ENVIRONMENTAL PROTECTION AGENCY STANDARDS

In December 1982, the Environmental Protection Agency issued a Final Environmental Impact Statement, which evaluated standards for cleanup and long term control of uranium mill tailings at inactive millsites that qualify for remedial action under the Uranium Mill Tailings Radiation Control Act of 1978 (PL 95-604).

The standards were issued to reduce and control the hazards associated with uranium mill tailings. This includes remedial action to clean up tailings that have spread from the original site or have been removed for use elsewhere. Although the Monticello Millsite is located on federal government property and not subject to Uranium Mill Tailings Radiation Control Act, the standards promulgated to implement that legislation are appropriate for remediation of the vicinity properties.

Extent of contamination is based on the criteria set by Environmental Protection Agency Standards as follows:

192.12 Standards

Remedial action shall be conducted so as to provide reasonable assurance that, as a result of residual radioactive materials from any designated processing site,

(a) the concentration of radium-226 in land averaged over any area of 100 square meters shall not exceed the background level of 2pCi/g by more than --

(1) 5 pCi/g, averaged over the first 15 cm of soil below the surface, and

(2) 15 pCi/g, averaged over 15 cm thick layers of soil more than 15 cm below the surface.

(b) in an occupied or habitable building --

(1) the objective of remedial action shall be, and reasonable effort shall be made to achieve, an annual average (or equivalent) radon decay product concentration (including background) not to exceed 0.02 WL. In any case, the radon decay product concentration (including background) shall not exceed 0.03 WL, and

(2) the level of gamma radiation shall not exceed the background level by more than 20 microroentgens per hour.

192.21 Criteria for Applying Supplemental Standards

The implementing agencies may apply standards in lieu of the standards of Subparts A or B if certain circumstances exist, as defined in 192.21.

192.22 Supplemental Standards

"Federal agencies implementing Subparts A and B may in lieu thereof proceed pursuant to this section with respect to generic or individual situations meeting the eligibility requirements of 192.21."

(a) "...the implementing agencies shall select and perform remedial actions that come as close to meeting the otherwise applicable standards as is reasonable under the circumstances."

(b) "...remedial actions shall, in addition to satisfying the standards of Subparts A and B, reduce other residual radioactivity to levels that are as low as is reasonably achievable."

(c) "The implementing agencies may make general determinations concerning remedial actions under this Section that will apply to all locations with specified characteristics, or they may make a determination for a specific location, the Department of Energy shall inform any private owners and occupants of the affected location and solicit their comments. The Department of Energy shall provide any such comments to the other implementing agencies [and] shall also periodically inform the Environmental Protection Agency of both general and individual determination under the provisions of this section."

HOT SPOT CRITERIA

As of 19 October 1987, the Department of Energy started applying the hot-spot guideline for clean-up of vicinity properties as outlined by the U.S. Department of Energy Guidelines for Residual Radioactive Material at Formerly Utilized Sites Remedial Action Program and Remote Surplus Facilities Management Program Sites [Revision 2 March 1987]. These guidelines read as follows:

1. The method for determining Hot Spot Limits, which is based on the 100 mrem/year Dose Limit, as described in the Formerly, Utilized Surplus Remedial Action Program procedures manual, shall still be applicable for determining allowable concentrations of radionuclides under inhomogeneous soil contamination conditions. However, the following approach, more appropriate for field applications, may be used in place of the Dose Limit method and is recommended for general applications.

2. For the alternative approach, the basic Hot Spot Limits will be calculated for each specific site as follows:

$$Shg = Sg * (100\ m^2/A)^{1/2}$$

where, Shg = the Hot Spot Limit (pCi/gram)
Sg = the Authorized Limit for a specific site
(Note: See 192.12 Standards, for limits -- Monticello background averages 2 pCi/gram)
A = the area of the hot spot in square meters
$(100/A)^{1/2}$ is the hot spot multiplication factor.

3. The limits shall be applied in the field over ranges of area with the factors being constant over a given area. The ranges and factors to be used are indicated below:

Range	Factor (Multiple of Authorized Limit)
$<1\ m^2$	10*
$1 - <3\ m^2$	6
$3 - <10\ m^2$	3
$10 - 25\ m^2$	2

*Areas less than one square meter are to be averaged over the one square meter and that average shall not exceed ten times the Authorized Limit.

4. The average Authorized Limit is considered adequate to protect the public for areas larger than 25 square meters; hence, no special Hot Spot Limits are required for areas larger than 25 square meters.

5. Averaging of hot spots less than or equal to 25 square meters shall be done only over the local hot spot area.

6. Every reasonable effort shall be made to identify and remove any source, which has a concentration of a radionuclide exceeding 30 times the Authorized Limit irrespective of area.